

## **Two New Species of the Genus *Parobisium* (Pseudoscorpionida: Neobisiidae) from Korea**

**Yong Hong**

(Department of Agricultural Biology, Chönbuk National University, Chönju 561-756, Korea)

### **ABSTRACT**

Two new species of the pseudoscorpion, *Parobisium longipalpus* n. sp. and *Parobisium robustiella* n. sp. are described herein. Thus, the genus *Parobisium* which comprises 4 species or subspecies belonging to the Korean Neobisiidae.

Key words: Neobisiidae, Pseudoscorpionida, Arachnida, taxonomy, new species, Korea

### **INTRODUCTION**

The reported Korean Neobisiidae includes the descriptions of 5 species belonging to three genera, *Microbisium* (Lee, 1981), *Microcreagris* (Lee, 1981; Bang, 1984), and *Parobisium* (Morikawa, 1970; Bang, 1984). In the genus *Parobisium* are two subspecies, *P. magnum chejuense* (Morikawa, 1970) from Cheju-do, and *P. magnum ohuayanum* (Morikawa, 1952; see Bang, 1984) from Chollabuk-do. The latter subspecies, *P. magnum ohuayanum* is known from Korea and Japan but not found in this study.

Two new species belonging to the genus *Parobisium* are described based on the materials which were collected from April 1991 to September 1995 from the litter layer in wooded forests. A total of 4 species or subspecies of the genus *Parobisium* have thus far been recorded in Korea.

## DESCRIPTIONS

Family Neobisiidae Chamberlin, 1930 두줄앓은뱅이과

Genus *Parobisium* Chamberlin, 1930 큰두줄앓은뱅이속(신칭)

***Parobisium magnum chejuense* (Morikawa, 1970) 제주두줄앓은뱅이 (Fig. 3, A)**

*Neobisium* (*Parobisium*) *magnum chejuense* Morikawa, 1970, p. 146, figs. 2f, 4.

*Parobisium magnum chejuense*: Harvey, 1990, p. 396.

**Description.** Body length of male 4.60 mm.

Carapace. Longer than broad; with blunt and small epistomal process; with 4 conspicuous eyes; carapace with 24 (25) setae of which 4 are positioned at the anterior margin and 6 (7) near the posterior margin.

Abdomen. Surface of tergites and sternites smooth; pleural membranes granulate; tergal chaetotaxy 8-12-12-12-4-; apical margin of maxilla with 4 setae.

Chelicera. Palm with 7 setae; fixed finger with 14-16 teeth; movable finger with 11-14 teeth of various sizes and shapes; flagellum with 8 serrate setae; galea in the form of a distinct, rounded knob on movable finger.

Pedipalp. Palps typical of the genus; proportions of the segments shown in Fig. 3, A; femur of palps longer than carapace; femur 3.1, tibia 2.2 and chela 2.6 times as long as broad; hand as long as deep; movable finger 1.6 times as long as hand.

Leg. Rather slender; entire femur of leg IV 3.0 and tibia 4.9 times as long as deep.

**Measurements (mm).** Body length 4.60. Carapace length 1.34. Chelicera 0.91 long. Palpal trochanter 1.01 by 0.54; femur 1.50 by 0.49; tibia 1.34 by 0.62; chela 2.27 by 0.89; hand 0.89 by 0.89; movable finger 1.38 long. Leg IV; entire femur 1.34 by 0.44; tibia 1.21 by 0.25; basitarsus 0.43 by 0.20; telotarsus 0.59 by 0.16.

**Material examined.** 1 trito, Cheju-do, Mt. Halla, 25 Oct. 1991 (K.Y. Lim); 1 trito, Cheju-do, Mt. Halla, Söngp'anak, 5 June 1994 (S.K. Kang); 2 ♀♀, 3 trito, 1 deuto, Cheju-do, Mt. Halla, Yöngshil, 15 Oct. 1994.

**Distribution.** Korea.

**Remarks.** As for body size, this subspecies is the biggest one of which was found in Korea up to now.

***Parobisium magnum ohuayanum* (Morikawa, 1952) 큰두줄앓은뱅이**

*Neobisium* (*Parobisium*) *ohuayanum* Morikawa, 1952, p. 252, figs. 5, 6; Morikawa, 1955, p. 221; Morikawa, 1957, p. 358, figs. 2b, f.

*Neobisium* (*Parobisium*) *magnum ohuayanum*: Morikawa, 1960, p. 113, pl. 2, fig. 2, pl. 6, fig. 4, pl. 9, fig. 3; Bang, 1984, p. 27, pl. 2, fig. 6, pl. 4, fig. 8, pl. 6, fig. 8, pl. 8, fig. 6, pl. 10, fig. 6.

*Parobisium magnum ohuayanum*: Harvey, 1990, p. 396.

**Description.** Body length 3.20 mm; palpal femur 0.94 mm, 3.3-3.5 times as long as broad; marginal teeth of movable and fixed fingers 116-127. Carapacial chaetotaxy 4-8:26.

**Distribution.** Korea and Japan.

***Parobisium longipalpus* n. sp. (Fig. 1 and Fig. 3, B)**

**Diagnosis.** Posterior margin of carapace with 5 setae; palpal femur 3.6-4.9 times as long as broad; chelal fingers with 84-99 teeth.

**Description** (based on 3 males, 2 female, 1 tritonymph and 1 deutonymph). Male and female similar, though female usually slightly bigger. Body length of males 2.50-3.10 mm.

Carapace. Longer than broad; with blunt epistomal process; with 4 conspicuous eyes; carapace with 24 setae of which 4 are positioned at the anterior margin and 6 near the posterior margin.

Abdomen. Surface of tergites and sternites smooth; pleural membranes granulate; tergal chaetotaxy 8-10(11)-11-12-11-; apical margin of maxilla with 4 setae.

Chelicera. Palm with 7 setae; fixed finger with 15-17 not-well developed, partly pointed teeth; movable finger with 8-11 teeth of various sizes and shapes; flagellum with 8 serrate setae; galea in the form of a distinct, rounded knob on movable finger.

Pedipalp. Palps typical of the genus; *ist* clearly on base of fixed finger of chela, forming together with *eb*, *esb*, *ib*, and *isb* of five tactile setae, *est* nearly submedian, the distal group on *et* and *it*. Proportions of the segments shown in Fig. 3, B; femur of palps longer than carapace; fixed finger with a marginal row of 84-86 contiguous, rounded teeth; movable finger with 85-99 teeth of similar size and shape; femur 3.6-4.9, tibia 2.9-3.3 and chela 3.5-4.2 times as long as broad; hand 1.6-1.9 times as long as deep; movable finger 1.2 times as long as hand.

Leg. Rather long and slender; entire femur of leg IV 3.0-3.5 and tibia 4.7-6.0 times as long as deep.

**Measurements (mm).** Figures given first are for the holotype; those in parentheses represent ranges of the 4 paratypes. Body length 2.74 (2.50-3.10). Carapace length 0.91 (0.91-0.94). Chelicera 0.63 (0.60-0.63) long. Palpal trochanter 0.64 (0.63-0.66) by 0.32 (0.29-0.35); femur 1.07 (1.05-1.16) by 0.25 (0.24-0.31); tibia 0.99 (0.94-1.01) by 0.32 (0.31-0.32); chela 1.79 (1.81-1.85) by 0.45 (0.43-0.53); hand 0.80 (0.81-0.82) by 0.45 (0.43-0.53); movable finger 0.99 (0.99-1.09) long. Leg IV; entire femur 1.15 (0.98-1.15) by 0.30 (0.30-0.33); tibia 0.87 (0.77-0.91) by 0.14 (0.14-0.17); basitarsus 0.31 (0.29-0.33) by 0.12 (0.11-0.12); telotarsus 0.46 (0.45-0.52) by 0.10 (0.10-0.11).

**Tritonymph.**

Body 2.46 mm in length.

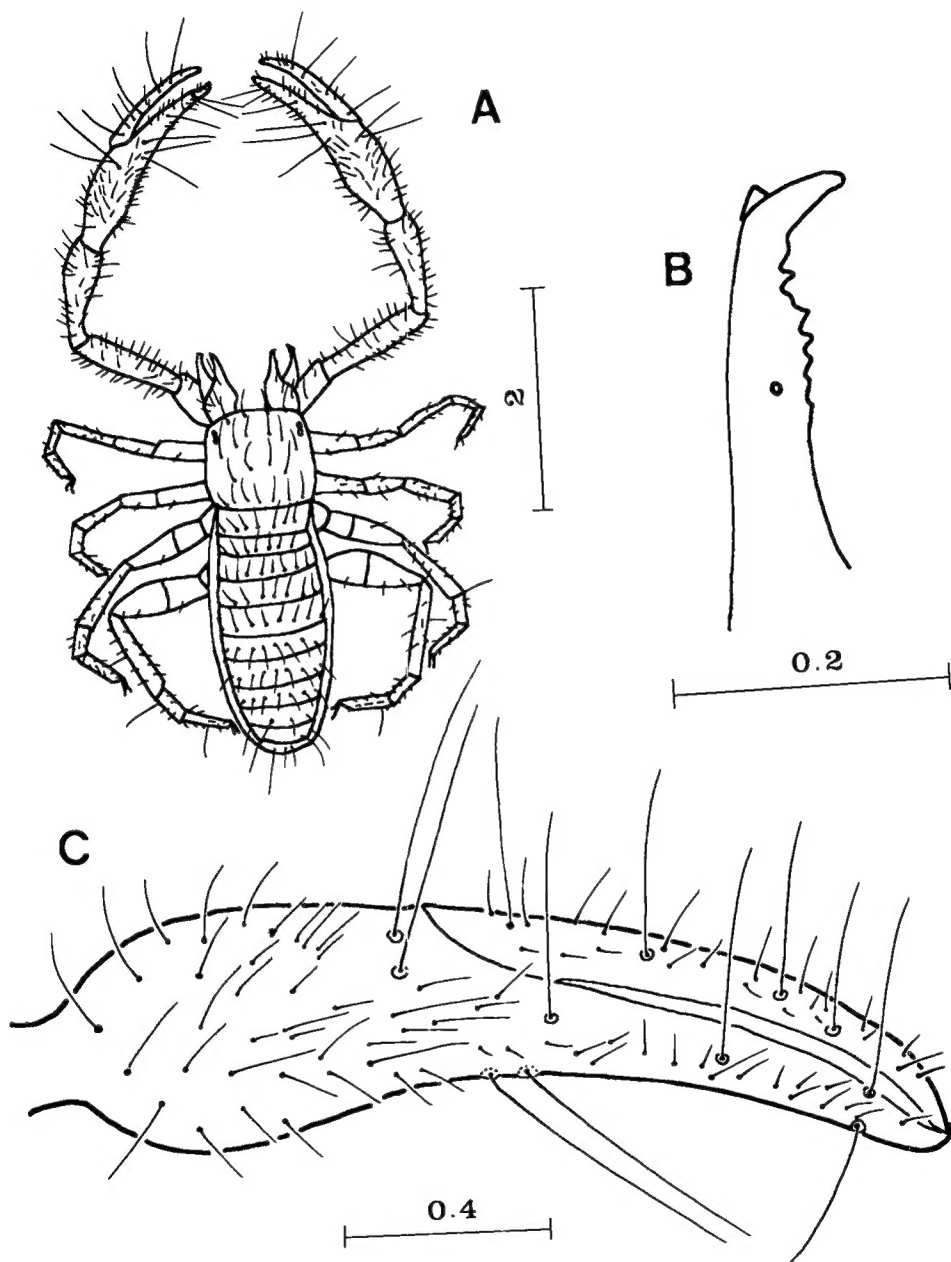
Carapace. With 4 eyes; carapace with 24 setae of which 4 are positioned at the anterior margin and 6 near the posterior margin.

Abdomen. Surface of tergites and sternites smooth; pleural membranes granulate; tergal chaetotaxy 7-10-11-11-12-10-12-12-10-8-4(2); apical margin of maxilla with 4 setae.

Chelicera. Palm with 6 setae; fixed finger with 13-14 teeth; movable finger with 11 teeth of various sizes and shapes; flagellum with 6-7 serrate setae; galea in the form of a distinct, rounded knob on movable finger.

Pedipalp. On movable finger *sb* not seen; fixed finger with a marginal row of 63 contiguous teeth; movable finger with 69 teeth of similar size and shape; femur 3.5, tibia 2.8 and chela 3.5 times as long as broad; hand 1.6 times as long as deep; movable finger 1.1 times as long as hand.

Leg. Entire femur of leg IV 3.5 and tibia 5.5 times as long as deep.



**Fig. 1.** *Parobistum longipalpus* n. sp.: A, body; B, galea; C, chela; scales in mm.

Measurements (mm). Body length 2.46. Carapace length 0.72. Chelicera 0.46 in length. Palpal trochanter 0.40 by 0.24; femur 0.71 by 0.21; tibia 0.64 by 0.23; chela 1.25 by 0.36; hand 0.59 by 0.36; movable finger 0.66 in length. Leg IV; entire femur 0.62 by 0.18; tibia 0.54 by 0.10; basitarsus 0.19 by 0.10; telotarsus 0.35 by 0.08.

**Deutonymph.**

Body 1.96 mm in length.

Carapace. With eyes not-well developed.

Chelicera. Palm with 5 setae; fixed finger with 14-16 teeth; movable finger with 8-12 teeth; flagellum with 5-6 serrate setae; galea in the form of a distinct, rounded knob on movable finger.

Pedipalp. On movable finger *t* not seen; fixed finger with a marginal row of 48 contiguous teeth; movable finger with 55 teeth of similar size and shape; femur 3.1, tibia 2.1, and chela 3.1 times as long as broad; hand 1.3 times as long as deep; movable finger 1.3 times as long as hand.

Leg. Entire femur of leg IV 2.8 and tibia 3.9 times as long as deep.

Measurements (mm). Body length 1.96. Carapace length 0.55. Chelicera 0.40 in length. Palpal trochanter 0.33 by 0.19; femur 0.55 by 0.18; tibia 0.45 by 0.21; chela 0.95 by 0.31; hand 0.41 by 0.31; movable finger 0.54 in length. Leg IV; entire femur 0.51 by 0.18; tibia 0.41 by 0.11; basitarsus 0.16 by 0.08; telotarsus 0.27 by 0.08.

**Type Material.** Holotype (male) and 3 paratypes (2 males and 1 female) from Chöllanam-do, Kurye-gun, Mt. Chiri, 16 May 1993 (Y. Hong). 1 paratype (female) from Chöllanam-do, Kurye-gun, Mt. Chiri, 12 June 1994. Deposited in the Chönbuk National University.

**Additional material examined.** 1 trito, Chöllabuk-do, Changsu-gun, Mt. Sokgüm, 3 June 1993; 5 ♀♀, 1 ♂, 1 trito, Chöllabuk-do, Koch'ang-gun, Mt. Sönnun, 6 May 1995; 2 ♀♀, Chöllabuk-do, Puan-gun, Pyönsan-myön, 8 Apr. 1995. Chöllanam-do, Kurye-gun, Mt. Chiri, P'iagol - 2 ♀♀, 2 ♂♂, 1 trito, 1 deuto, 16 May 1993; 1 ♂, 3 trito, 1 deuto, 10 June 1993; 1 ♀, 1 ♂, 12 trito, 11 July 1993; 1 trito, 18 Aug. 1993; 4 ♀♀, 12 Sep. 1993; 2 ♀♀, 2 ♂♂, 18 May 1994; 7 ♀♀, 4 ♂♂, 5 trito, 12 June 1994; 1 ♀, 5 trito, 10 July 1994; 1 ♀, 1 ♂, 1 deuto, Chöllanam-do, Kwangu-shi, Mt. Mudüng, 8 Oct. 1994; 2 ♀♀, 11 Sep. 1994; 1 ♀, Chöllanam-do, Süngju-gun, Mt. Chogye, 5 Mar. 1995.

**Distribution.** Korea.

**Remarks.** The specific name is derived from the long palps. The present species appears to be close to *P. magnum ohuayanum* (Morikawa, 1952) from Japan, but is separated from chelal ratio (L/B) and length of femur in palps. Also, *P. utahensis* Muchmore, 1968 from Utah appears resembled in number and shape of flagellum, but is distinguished by size.

### ***Parobisium robustiella* n. sp. (Fig. 2 and Fig. 3, C)**

**Diagnosis.** Palpal femur 2.49-3.56 times as long as broad; chelal length 1.30-1.53 mm.

**Description** (based on 3 males and 3 females, 1 tritonymph and 1 deutonymph). Male and female similar, though female usually slightly bigger. Body length of males 2.12-2.22 mm, and of females 2.46-2.66 mm.

Carapace. Longer than broad, with blunt epistomal process; with 4 conspicuous eyes; carapace with 22 setae of which 4 are located at the anterior margin and 6 near the posterior margin.

Abdomen. Surface of tergites and sternites smooth; pleural membranes granulate; apical margin of maxilla with 4 setae.

Chelicera. Palm with 7 setae; fixed finger with 12-17 not-well developed, partly pointed teeth; movable finger with 12-15 teeth of various sizes and shapes; flagellum with 6-7 serrate setae; galea in the form of a distinct, rounded knob on movable finger.

Pedipalp. Palps typical of the genus; *ist* clearly on base of fixed finger of chela, forming together with *eb*, *esb*, *ib*, and *isb* of five tactile setae, *est* nearly submedian, the distal group on *et* and *it*.

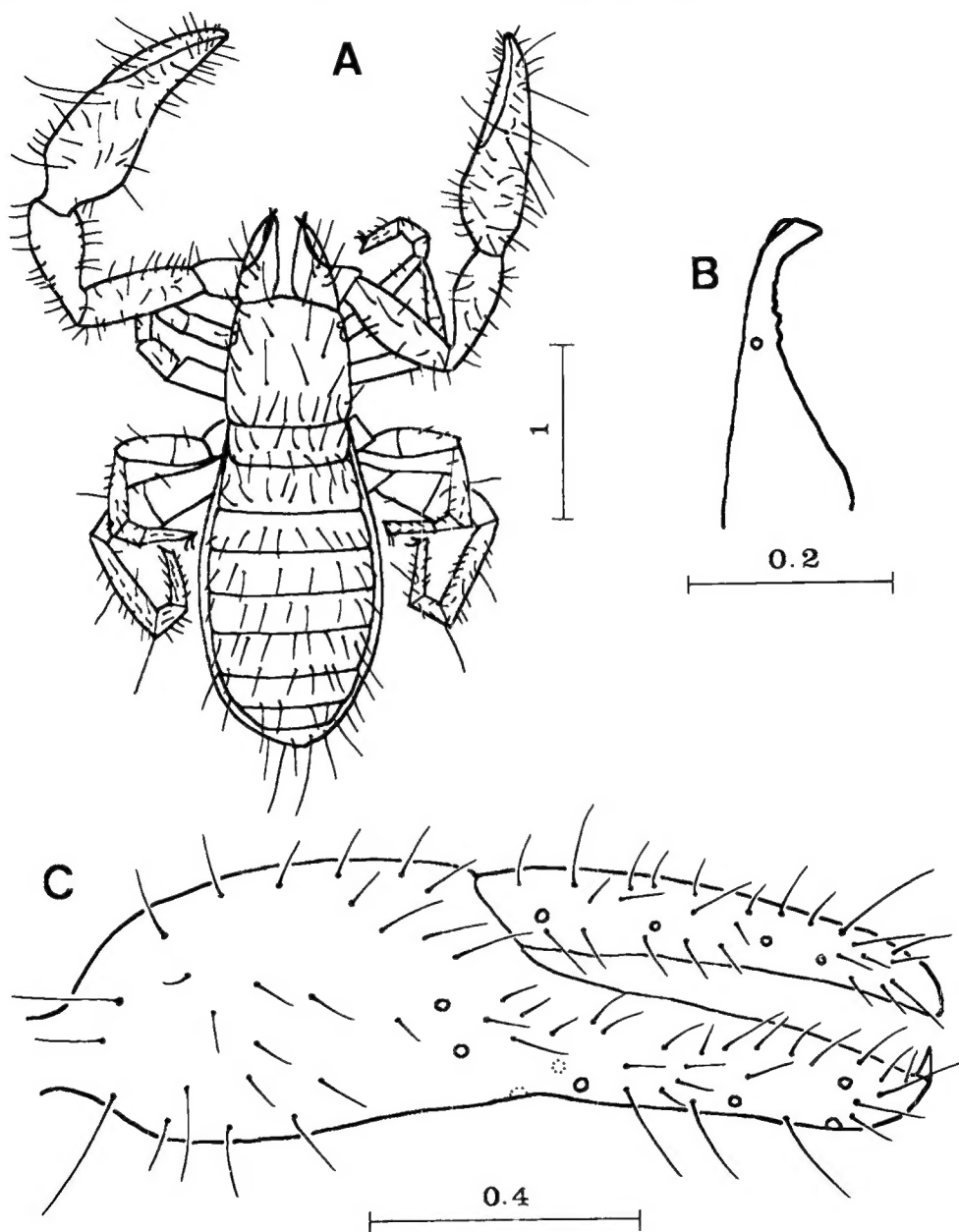
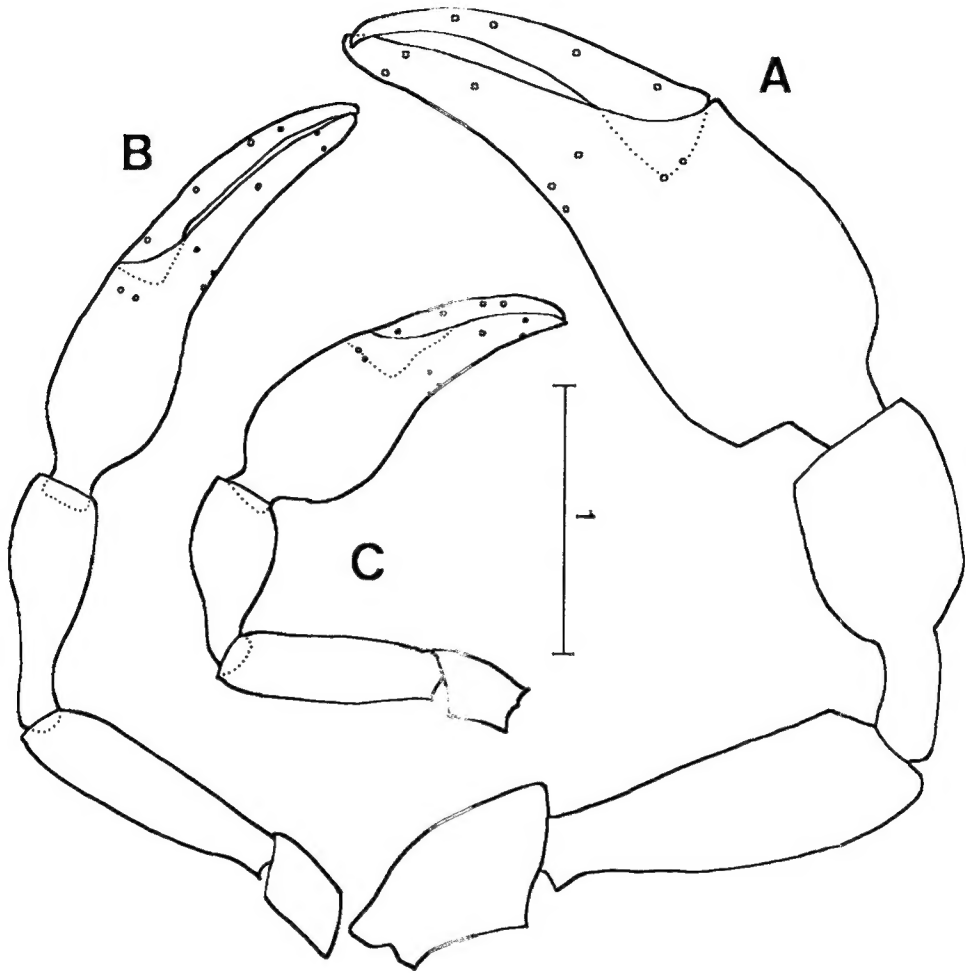


Fig. 2. *Parobisium robustiella* n. sp.: A, body; B, galea; C, chela; scales in mm.

Proportions of the segments shown in Fig. 3, C; femur of palps longer than carapace; fixed finger with a marginal row of 51-66 contiguous, rounded teeth; movable finger with 56-58 teeth of similar size and shape; femur 2.5-3.6, tibia 1.9-2.5 and chela 2.7-3.4 times as long as broad; hand 1.3-1.8 times as long as deep; movable finger 0.9-1.3 times as long as hand.

Leg. Entire femur of leg IV 2.4-3.0 and tibia 4.1-5.4 times as long as deep.

**Measurements (mm).** Figures given first: are for the holotype; those in parentheses represent ranges of the 5 paratypes. Body length 2.10 (2.12-2.66). Carapace length 0.67 (0.67-0.82).



**Fig. 3.** Pedipalp of the genus *Parobisium*: A, *Parobisium magnum chejuense*; B, *Parobisium longipalpus* n. sp.; C, *Parobisium robustiella* n. sp.; scales in mm.

Chelicera 0.51 (0.50-0.65) long. Palpal trochanter 0.45 (0.45-0.53) by 0.24 (0.24-0.30); femur 0.79 (0.78-0.92) by 0.30 (0.25-0.37); tibia 0.71 (0.68-0.82) by 0.28 (0.28-0.40); chela 1.34 (1.30-1.53) by 0.42 (0.39-0.56); hand 0.62 (0.60-0.74) by 0.42 (0.39-0.56); movable finger 0.72 (0.64-0.80) long. Leg IV; entire femur 0.72 (0.74-0.84) by 0.28 (0.28-0.30); tibia 0.68 (0.66-0.74) by 0.12 (0.12-0.17); basitarsus 0.25 (0.25-0.27) by 0.11 (0.11-0.12); telotarsus 0.29 (0.27-0.40) by 0.10 (0.09-0.10).

#### **Tritonymph.**

Body 2.06 mm in length.

Carapace. With 4 eyes; carapace with 23 setae of which 4 are located at the anterior margin and 7 near the posterior margin.

Chelicera. Palm with 6 setae; fixed finger with 12-14 teeth; movable finger with 12-13 teeth of various sizes and shapes; flagellum with 6 serrate setae; galea in the form of a distinct, rounded knob on movable finger.

Pedipalp. On movable finger *sb* not seen; fixed finger with a marginal row of 46 contiguous teeth; movable finger with 54 teeth of similar size and shape; femur 3.1 times as long as broad.

#### **Deutonymph.**

Body 1.30 mm in length.

Chelicera. Palm with 5 setae; fixed finger with 15-17 teeth; movable finger with 13-15 teeth; flagellum with 5 serrate setae; galea in the form of a distinct, rounded knob on movable finger.

Pedipalp. On movable finger *t* not seen; fixed finger with a marginal row of 34 contiguous teeth; movable finger with 38 teeth of similar size and shape.

**Type Material.** Holotype (male) and 3 paratypes (2 males and 1 female) from Chöllabuk-do, Chinan-gun, Chöngch'ön-myön, 8 May 1993 (Y. Hong). 1 paratype (female) from Chöllabuk-do, Chöngüp-gun, Mt. Naejang, 31 May 1995; 1 paratype (female) from Chöllabuk-do, Imshil-gun, Mt. Hoemun, 6 June 1995. Deposited in the Chönbuk National University.

**Additional material examined.** 3 ♀♀, 2 ♂♂, 4 deuto, Chöllabuk-do, Chinan-gun, Chöngch'ön-myön, 8 May 1993; 1 ♀, 1 trito, 1 deuto, Chöllabuk-do, Chinan-gun, Chukdo, 12 June 1993; 1 ♀, Chöllabuk-do, Chinan-gun, Mt. Unjang, 17 June 1995; 1 ♀, 1 ♂, Chöllabuk-do, Chöngüp-gun, Mt. Naejang, 31 May 1995; 5 ♂♂, 1 trito, Chöllabuk-do, Imshil-gun, Mt. Hoemun, 6 June 1995; 1 ♂, Chöllabuk-do, Wanju-gun, Mt. Moak, 9 May 1991.

**Distribution.** Korea.

**Remarks.** The species is morphologically robust. This species appears to be similar to *Parobisium longipalpus* n. sp., but is distinguished by the number of palpal teeth (fingers with 84-99 teeth) and carapacial chaetotaxy (4-6:24).

## **ACKNOWLEDGEMENTS**

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## 한국산 큰앓은뱀이속(앓은뱀이목: 두줄앓은뱀이과)의 2신종

홍 용

(전북대학교 농과대학 농생물학과)

## 요 약

1991년 4월부터 1995년 9월까지 전국의 삼림토양에서 채집한 앓은뱀이를 동정한 결과 큰앓은뱀이속 *Parobisium magnum*의 1아종을 포함한 3종을 기록했으며 이중 2신종, *Parobisium longipalpus* n. sp. (긴두줄앓은뱀이: 신칭), *Parobisium robustiella* n. sp. (작은두줄앓은뱀이: 신칭)가 포함되어 있다. 이에 한국산 큰앓은뱀이는 총 4종이 된다.